PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Heung-bae LEE

Docket No: Q61824

Appln. No.: 09/738,900

Group Art Unit: 2637

Confirmation No.: 2194

Examiner: GHEBRETGINSAE, TEMESGHEN

Filed: December 18, 2000

For: DIRECT-CONVERSION DEMODULATOR HAVING AUTOMATIC-GAIN-CONTROL FUNCTION

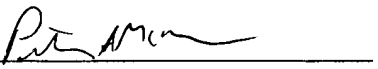
SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. A check for the statutory fee of $500.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,



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Date: December 15, 2006

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

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I. REAL PARTY IN INTEREST

Based on the information supplied by the Appellant, and the best of Appellant's legal representative's knowledge, the real party in the interest is the assignee, SAMSUNG ELECTRONICS CO., LTD. The Assignment was recorded on May 2, 2001, at Reel 011758, Frame 0696.

II. RELATED APPEALS AND INTERFERENCES

To the best knowledge and belief of Appellant, the Assignee and the undersigned attorney, there are no other appeals or interferences before the Board of Appeals and Interferences ("the Board") that will directly affect or be affected by the Board's decision in the present Appeal.

III. STATUS OF CLAIMS

Claims 1-3 are pending in the application.

Claims 1-3 stand rejected under 35 U.S.C. §103 as being unpatentable over Applicant's admitted prior art in view of Hiroshi (JP-6244754).

IV. STATUS OF AMENDMENTS

On May 2, 2001, a Preliminary Amendment was filed amending claim 1 and adding claim 3. The Preliminary Amendment was entered. There are no unentered Amendments in this application.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1

Claim 1 generally relates to a direct-conversion demodulator in a RF reception system for radio communication (the specification, for example, at page 1, lines 9-14).

Claim 1 recites a down mixer for mixing a received RF signal and carrier signals, and thereby converting the RF signal into baseband signals of channels I and Q (for example, Fig. 2, elements 212 and 214; specification, page 5, lines 13-18).

Claim 1 further recites a filter for filtering high-frequency components of the baseband signals of the two channels output from the down mixer (for example, Fig. 2, elements 232 and 234; specification, page 6, lines 3-7).

Claim 1 also recites a detector for detecting a gain control level corresponding to the difference obtained by comparing the levels of the baseband signals of the two channels output by the filter with a predetermined level (for example, Fig. 2, element 270; specification, page 6, lines 8-13; Fig. 3, elements 310, 320, 330 and 340; specification, page 7, lines 6-18).

Claim 1 further recites an AGC for controlling gains of the baseband signals for each of the two channels output from the down mixer according to the gain control level detected by the detector (for example, Fig. 2, element 270; specification, page 5, lines 13-18).

Claim 1 further recites a differentiator for differentiating the baseband signals of the two channels output from the filter (for example, Fig. 2, elements 242 and 244; specification, page 6, lines 14-19).

Claim 1 also recites a multiplier for cross multiplying the baseband signals of the two channels output from the differentiator and the baseband signals of the two channels output from the filter (for example, Fig. 2, elements 252 and 254; specification, page 6 line 19 to page 7, line 2).

Finally, claim 1 recites an adder for adding the baseband signals of the two channels output by the multiplier and thereby detecting data (for example, Fig. 2, element 262; specification, page 7, lines 3-5).

Claim 3

Claim 3 generally relates to an RF reception system for radio communication (the specification, for example, at page 1, lines 9-14).

Claim 3 recites an RF receiver for receiving an RF signal (for example, Fig. 2, which shows an RF signal being input; specification, page 5, lines 13-15).

Claim 3 further recites a down mixer for mixing the received RF signal and carrier signals, and thereby converting the received RF signal into baseband signals of channels I and Q (for example, Fig. 2, elements 212 and 214; specification, page 5, lines 13-18).

Claim 3 also recites a filter for filtering high-frequency components of the baseband signals of the two channels output from the down mixer (for example, Fig. 2, elements 232 and 234; specification, page 6, lines 3-7).

Claim 3 further recites a detector for detecting a gain control level corresponding to the difference obtained by comparing levels of the baseband signals of the two channels output by

the filter with a predetermined level (for example, Fig. 2, element 270; specification, page 6, lines 8-13; Fig. 3, elements 310, 320, 330 and 340; specification, page 7, lines 6-18).

Claim 3 also recites an AGC for controlling gains of the baseband signals for each of the two channels output from the down mixer according to the gain control level detected by the detector (for example, Fig. 2, element 270; specification, page 5, lines 13-18).

Claim 3 further recites a differentiator for differentiating the baseband signals of the two channels output from the filter (for example, Fig. 2, elements 242 and 244; specification, page 6, lines 14-19).

Claim 3 also recites a multiplier for cross multiplying the baseband signals of the two channels output from the differentiator and the baseband signals of the two channels output from the filter (for example, Fig. 2, elements 252 and 254; specification, page 6, line 19 to page 7, line 2).

Finally, claim 3 recites an adder for adding the baseband signals of the two channels output by the multiplier and thereby detecting data (for example, Fig. 2, element 262; specification, page 7, lines 3-5).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The sole grounds of rejection to be determined on appeal is whether claims 1-3 are properly rejected under 35 U.S.C. § 103 as being unpatentable over Applicant's admitted prior art in view of Hiroshi (JP-6244754).

VII. ARGUMENT

Rejection of Claims 1-3 under 35 U.S.C. § 103 as being unpatentable over Applicant's admitted prior art in view of Hiroshi (JP-6244754).

Appellant respectfully submits that claims 1-3 are not rendered obvious, within the meaning of 35 U.S.C. § 103, by the combination of Applicant's admitted prior art and Hiroshi proposed by the Examiner, at least because the combination of references fail to teach or suggest the claimed detector in combination with the claimed AGC.

In particular, claim 1 recites "a detector for detecting a gain control level corresponding to the difference obtained by comparing the levels of the baseband signals of the two channels output by the filter with a predetermined level". In the rejection, the Examiner refers to Fig. 27(b) of Hiroshi as showing this feature, but Fig 27(b) shows a gain control circuit 4202 that outputs a signal based upon an integrated value of a difference between a reference signal and the sum of two other signals. This integrated value is applied to the amplifiers and is not analogous to the claimed "gain control level corresponding to the difference obtained by comparing the levels of the baseband signals of the two channels output by the filter with a predetermined level" and the AGC controlling gains according to the gain control level detected by the detector. That is, because the output of element 4202 is an integrated value, it does not correspond to the output of the subtractor shown in Fig. 27(b). At least for this reason, Hiroshi does not teach or suggest the claimed detector or the claimed AGC for controlling gains according to the gain control level detected by the detector.

In the Office Action dated December 13, 2005, the Examiner responds to the above argument by stating that:

> Hiroshi discloses a detector (4202(a) and 4202(b)) for detecting a gain control level corresponding to the difference obtained by comparing the level of the baseband signals of the two channel (4203) by filter with a predetermined level. (See fig. 27 (a) and (b)) and Fig. 4 (elements 115, 116). Hiroshi further shows that the output from the subtractor being integrated. It is well settled, however, that omission of an element and its function in a combination is an obvious expedient if the remaining elements perform the same functions as before (In re Nelson, 40 CCPA 708).
>
> Omission of an Element and its function is obvious if the function of the element is not desired (Ex parte WU, 10 USPQ 2031).

Office Action of December 13, 2005, page 4, numbered paragraph 5.

First, Appellant respectfully disagrees with the Examiner's conclusion that the claimed invention differs from the combination of references in that the invention omits an element of the references. Rather, the applied references do not teach all the elements of the claim. That is, the applied references fail to teach or suggest "a detector for detecting a gain control level corresponding to the difference obtained by comparing the levels of the baseband signals of the two channels output by the filter with a predetermined level" and "an AGC for controlling gains of the baseband signal for each of the two channels output from the down mixer according to the gain control level detected by the detector."

In more detail, claims 1 and 3 each requires that the AGC control gains according to the gain control level of the detector, and this level corresponds to the difference obtained by comparing the levels of the baseband signals of the two channels output by the filter with a predetermined level. There is no element in the references that performs the function of the claimed AGC.

In *In re Nelson*, cited by the Examiner, the decision was based on the belief "that the omission of the two outer paper strips of the Bulis structure would [not] cause the other elements of the device to function differently from those which they normally would perform if the strips were present in that container." This is different from the present case, however, in that omitting Hiroshi's integrator would cause other elements of Hiroshi to perform differently. That is, if the integrator were to be removed from the circuit of Hiroshi, so that the output of the subtractor, rather than the output of the integrator, is directly applied to the downstream circuitry, then the functions of the downstream circuitry would have to be modified to accommodate this change. This is in sharp contrast to *In re Nelson*, where the strips could simply be removed without affecting the other elements of the structure.

The present case is also very different from *Ex parte Wu*. In that case, a claimed corrosion inhibitor was different from a corrosion inhibitor of a reference in that the corrosion inhibitor of the reference contained polybasic salts, whereas the claims in dispute did not. The Board found that it would have been obvious to omit the polybasic salts of the reference where the function attributed to such salt is not desired, such as in compositions for preventing corrosion in environments that do not encounter fresh water. So, *Ex parte Wu* also involved a

case where an element was simply omitted. This is very different from the present case, which does not simply involve omitting an element of the reference, but, in the Examiner's proposed combination, would require that the functions of other elements of the references be changed to accommodate the elimination of the integrator. There is no teaching or suggestion in the references for such a modification.

Second, Appellant respectfully submits that procedural processes which allow portions of the claims to be ignored are, at best suspect and, at worst, contrary to law. The case of *In re Ochiai et al.*, 37 U.S.P.Q.2d 1127 (Fed. Cir. 1995), is illustrative. In *Ochiai* the CAFC soundly rejected *per se* rules of patentability. Thus, whether or not a claim recites patentable subject matter can only be determined on a case by case determination after considering each and every limitation recited in the claim. Since the CAFC has made it clear time and time again that it is **the claim as a whole which must be considered during examination**, statements regarding parts of the claim which are or are not given "patentable weight" are not well taken.

In the present case, the Examiner is relying on a principle that omission of an element is obvious if the remaining elements perform the same functions as before or if the function of the element is not desired. Appellant respectfully submits this is not enough to support a claim rejection. Rather, there must be some teaching or suggestion in the art for omitting an element, and for modifying the remaining structure to accommodate the fact that the element has been omitted.

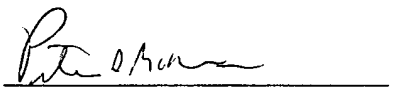
In the Advisory Action, in addition to referring to elements of Figs. 27(a) and (b) which were discussed above, the Examiner refers to element 115 of Hiroshi (Fig. 1) as disclosing a detector for detecting a gain control level corresponding to the difference obtained by comparing (the output from elements 124 and 125; Fig. 1) with a predetermined level (116; Fig. 1), and controlling gains of the baseband signals. Appellant notes, however, that the Fig. 1 configuration shown in Hiroshi has amplifiers 112 and 113 connected between the output of the filters 110 and 111. Thus, the detector 115 cannot possibly detect a gain control level corresponding to the difference obtained by comparing the levels of the baseband signals of the two channels output by the filter with a predetermined level. In Fig. 1 of Hiroshi, the signals output by the filters have been amplified by amplifiers 113 and 114, so the levels of the baseband signals output by the filters are never detected by the detector 115.

In view of the above, Appellant respectfully submits that Appellant's admitted prior art and Hiroshi, taken either alone or in combination, fail to teach or suggest "a detector for detecting a gain control level corresponding to the difference obtained by comparing the levels of the baseband signals of the two channels output by the filter with a predetermined level" and "an AGC for controlling gains of the baseband signal for each of the two channels output from the down mixer according to the gain control level detected by the detector," and at least for this reasons, the rejection of claims 1-3 under 35 U.S.C. § 103 as being unpatentable over Appellant's admitted prior art in view of Hiroshi should not be maintained.

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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CLAIMS APPENDIX

CLAIMS 1-3 ON APPEAL:

1. A direct-conversion demodulator in a RF reception system for radio communication comprising:

a down mixer for mixing a received RF signal and carrier signals, and thereby converting the RF signal into baseband signals of channels I and Q;

a filter for filtering high-frequency components of the baseband signals of the two channels output from the down mixer;

a detector for detecting a gain control level corresponding to the difference obtained by comparing the levels of the baseband signals of the two channels output by the filter with a predetermined level;

an AGC for controlling gains of the baseband signals for each of the two channels output from the down mixer according to the gain control level detected by the detector;

a differentiator for differentiating the baseband signals of the two channels output from the filter;

a multiplier for cross multiplying the baseband signals of the two channels output from the differentiator and the baseband signals of the two channels output from the filter; and

an adder for adding the baseband signals of the two channels output by the multiplier and thereby detecting data.

2. The direct-conversion demodulator according to claim 1, wherein the detector comprises:

a multiplying unit for multiplying the baseband signals of the two channels with themselves;

an adding unit for adding the baseband signals of the two channels multiplied by the multiplying unit and thereby detecting the levels of each of the signals; and

a level-comparing unit for generating a gain control level corresponding to the difference obtained by comparing the levels of the signals detected by the adding unit with a predetermined level.

3. An RF reception system for radio communication comprising:

an RF receiver for receiving an RF signal;

a down mixer for mixing the received RF signal and carrier signals, and thereby converting the received RF signal into baseband signals of channels I and Q;

a filter for filtering high-frequency components of the baseband signals of the two channels output from the down mixer;

a detector for detecting a gain control level corresponding to the difference obtained by comparing levels of the baseband signals of the two channels output by the filter with a predetermined level;

an AGC for controlling gains of the baseband signals for each of the two channels output from the down mixer according to the gain control level detected by the detector;

a differentiator for differentiating the baseband signals of the two channels output from the filter;

a multiplier for cross multiplying the baseband signals of the two channels output from the differentiator and the baseband signals of the two channels output from the filter; and

an adder for adding the baseband signals of the two channels output by the multiplier and thereby detecting data.

EVIDENCE APPENDIX:

NONE

RELATED PROCEEDINGS APPENDIX

NONE